

Claims

- [c1] 1. An apparatus consisting of the following components:
- a. A pressurized heating chamber;
 - b. Said pressurized heating chamber containing the following components:
 - i. A cold water input connection,
 - ii. A pressure regulator,
 - iii. A cleaning fluid output connection,
 - iv. A cleaning fluid heater, and
 - v. A power source that provides power to said heater;
 - c. A means to control the temperature of said heater;
 - d. A cleaning fluid valve to start and stop the cleaning fluid flow;
 - e. A means to provide power to said cleaning fluid valve;
 - f. A cleaning nozzle mounted within the confines of any conventional toilet;
 - g. A means to pipe the cleaning fluid into said cleaning nozzle;
 - h. Said cleaning nozzle creates a defused stream of cleaning fluid to a specific projected cleaning space located within the confines of the toilet bowl where,
 - i. Said projected cleaning space top area is parallel to the area projected by the upper rim of the toilet bowl,

ii.Said projected cleaning space top area is centered in the rear half of the toilet bowl along the longitudinal center line and segmented by the latitudinal center line of the toilet bowl,

iii.Said projected cleaning space top area is singular in any geometric shape fitting within the confines of an oval area, centered in the rear half along the longitudinal axis of any conventional toilet bowl, where said oval area has a maximum width of 150 millimeters and a maximum length of 200 millimeters, and said oval area is bound in the rear end of said toilet bowl by the inner rim of said toilet bowl,

iv.Said projected cleaning space has a height protruding into the toilet bowl of up to 100 millimeters.

[c2] 2.An apparatus specified in [Claim Reference]Claim 1, where the cleaning nozzle creates a plurality of streams of cleaning fluid toward the projected cleaning space.

[c3] 3.An apparatus specified in [Claim Reference]Claim 1, where the cleaning nozzle creates a single stream of cleaning fluid toward the projected cleaning space.

[c4] 4.An apparatus specified in [Claim Reference]Claim 1, where the pressurized heating chamber has a volume ranging from 200 to 5,000 cubic centimeters.

- [c5] 5. An apparatus specified in [Claim Reference] Claim 1, where
- a. said cleaning nozzle is mounted along the longitudinal axis at the back end of any conventional toilet bowl with a vertical tolerance from the center line of plus or minus 100 millimeters, and
 - b. said cleaning nozzle is positioned below the upper edge of the rim of said toilet bowl within the toilet bowl in a horizontal tolerance range from 0 to 150 millimeters and within 0 to 100 millimeters of the inner wall of said toilet bowl.
- [c6] 6. An apparatus specified in [Claim Reference] Claim 1, where
- a. said cleaning nozzle is mounted along the longitudinal axis at the back end of any conventional toilet bowl with a vertical tolerance from the center line of plus or minus 100 millimeters and
 - b. said cleaning nozzle is positioned below the upper edge of the rim of said toilet bowl within the toilet bowl in a horizontal tolerance range from 0 to 150 millimeters, and within 0 to 200 millimeters of the inner wall of said toilet bowl.
- [c7] 7. An apparatus specified in [Claim Reference] Claim 1, where a pressure sensitive switch is located under the lid of any conventional toilet bowl.

- [c8] 8. An apparatus specified in [Claim Reference]Claim 1, where the cleaning nozzle has a sanitary self cleaning cycle after every use wherein a disinfectant and deodorizer is deposited onto the exposed nozzle surfaces.
- [c9] 9. An apparatus specified in [Claim Reference]Claim 1, where the cleaning nozzle is replaceable.
- [c10] 10. An apparatus specified in [Claim Reference]Claim 1, where the cleaning nozzle is replaceable and contains different orifice sizes and orifice shapes.
- [c11] 11. An apparatus specified in [Claim Reference]Claim 10, where the cleaning nozzle is color coded.
- [c12] 12. An apparatus specified in [Claim Reference]Claim 9, where the cleaning nozzle connection is indexed and a push-in type.
- [c13] 13. An apparatus specified in [Claim Reference]Claim 1, where the cleaning nozzle is retractable to a non-use position.
- [c14] 14. An apparatus specified in [Claim Reference]Claim 1, where the cleaning nozzle movement into an operating position is cleaning fluid pressure activated.
- [c15] 15. An apparatus specified in [Claim Reference]Claim 1,

where the cleaning nozzle movement into an operating position is solenoid activated.

- [c16] 16. An apparatus specified in [Claim Reference]Claim 1, where the cleaning nozzle movement into an operating position is mechanically activated.
- [c17] 17. A process employing apparatus specified in [Claim Reference]Claim 1, where the cleaning fluid is provided to the projected cleaning space at a rate ranging from 10 to 50 milliliters per second and at a temperature ranging from 25 to 50 degree centigrade.
- [c18] 18. A process employing apparatus specified in [Claim Reference]Claim 1, where the cleaning fluid is provided to the projected cleaning space at a rate ranging from 10 to 50 milliliters per second and at a temperature ranging from 25 to 50 degree centigrade.
- [c19] 19. A process employing apparatus specified in [Claim Reference]Claim 1 where the cleaning fluid is provided to the projected cleaning space at a rate ranging from 10 to 50 milliliters per second, at a temperature ranging from 25 to 50 degree centigrade, and at a nozzle exit velocity ranging from 4 to 6 meters per second.
- [c20] 20. A process employing apparatus specified in [Claim Reference]Claim 1, where cleaning fluid is provided to

the projected cleaning space at a rate ranging from 10 to 50 milliliters per second at and a temperature ranging from 25 to 50 degree centigrade, and a disinfectant and deodorizer is deposited onto the exposed nozzle surfaces for a time period ranging from 0.5 to 10 seconds at the end of every cleaning cycle.

- [c21] 21.A process employing apparatus specified in [Claim Reference]Claim 1, where the cleaning fluid is water.
- [c22] 22.A process employing apparatus specified in [Claim Reference]Claim 1, where the cleaning fluid is a mixture of soap and water.
- [c23] 23.A process employing apparatus specified in [Claim Reference]Claim 1, where the cleaning fluid is a mixture of water, anti-bactericides and soap.
- [c24] 24.A process employing apparatus specified in [Claim Reference]Claim 1, where the cleaning fluid is a mixture of water, anti-bactericides, anti-smelling agents and soap.
- [c25] 25.A process employing apparatus specified in [Claim Reference]Claim 1, where the duration of the cleaning cycles is automatically time controlled.
- [c26] 26.A process employing apparatus specified in [Claim

Reference]Claim 1, where the duration of the cleaning cycles to manually time controlled.

[c27] 27.A process employing apparatus specified in [Claim Reference]Claim 1, where the rate of cleaning fluid is user controllable within a range of 10 to 50 milliliters per second.

[c28] 28.A process employing apparatus specified in [Claim Reference]Claim 1, where the temperature of the cleaning fluid is user controllable within a range of 15 to 50 degrees centigrade.

[c29] 29.A process employing apparatus specified in [Claim Reference]Claim 1, where the rate of cleaning fluid is controllable within a range of 10 to 50 milliliters per second, and where the temperature of the cleaning fluid is controllable within a range of 30 to 50 degrees centigrade.

[c30] 30.A process employing apparatus specified in [Claim Reference]Claim 1, where the rate of cleaning fluid is controllable within a range of 10 to 50 milliliters per second, the temperature of the cleaning fluid is controllable within a range of 30 to 50 degrees centigrade, and a disinfectant and deodorizer is deposited onto the exposed nozzle surfaces for a period ranging from 0.5 to

10 seconds at the end of every cleaning cycle.

- [c31] 31. An apparatus consisting of the following components:
- a. A piping connection from a cold water source to an external housing,
 - b. Said external housing having a volume ranging from 50 to 500 cubic inches,
 - c. Said housing containing the following components:
 - i. A cleaning fluid-level-controlling-valve to maintain the water level within said housing,
 - ii. A cleaning fluid pump operating at a rate ranging from 10 to 50 milliliters per second,
 - iii. A pressure release valve that interrupts the cleaning fluid flow after deactivation of said fluid pump,
 - iv. A heater that increases the fluid to a temperature ranging from 15 degrees Celsius to 50 degree Celsius,
 - v. An electric power source that provides power to both said heater and pump,
 - d. A means to control duration of pump activation;
 - e. A means to pipe the cleaning fluid to a cleaning nozzle;
 - f. A replaceable cleaning nozzle mounted within the confines of any conventional toilet bowl;
 - g. Said cleaning nozzle creates a single diffused defusing a stream of cleaning fluid to a specific projected cleaning space located within the confines of the toilet bowl

where;

i.Said projected cleaning space top area is parallel to the area projected by the upper rim of the toilet bowl,

ii.Said projected cleaning space top area is centered in the rear half of the toilet bowl along the longitudinal center line and segmented by the latitudinal center line of the toilet bowl,

iii.Said projected cleaning space top area is singular in any geometric shape fitting within the confines of an oval area, centered in the rear half along the longitudinal axis of any conventional toilet bowl, where said oval area has a maximum width of 150 millimeters and a maximum length of 200 millimeters, and said oval area is bound in the rear end of said toilet bowl by the inner rim of said toilet bowl,

iv.Said projected cleaning space has a height protruding into the toilet bowl of up to 100 millimeters.

[c32] 32.An apparatus specified in [Claim Reference]Claim 31, where the cleaning nozzle is replaceable and contains different orifice sizes and orifice shapes.

[c33] 33.An apparatus specified in [Claim Reference]Claim 32, where the cleaning nozzle is color coded.

[c34] 34.An apparatus specified in [Claim Reference]Claim 33, where the cleaning nozzle connection is indexed and a

push-in type.

- [c35] 35. An apparatus specified in [Claim Reference] Claim 31, where the cleaning nozzle is retractable to a non-use position.
- [c36] 36. An apparatus specified in [Claim Reference] Claim 31, where the cleaning nozzle movement into an operating position is cleaning fluid pressure activated.
- [c37] 37. An apparatus specified in [Claim Reference] Claim 31, where the cleaning nozzle movement into an operating position is solenoid activated.
- [c38] 38. An apparatus specified in [Claim Reference] Claim 31, where the cleaning nozzle movement into an operating position is mechanically activated.
- [c39] 39. An apparatus consisting of the following components:
 - a. A submergible housing;
 - b. Said housing having a plurality of communicating fluid entry openings along its vertical axis;
 - c. Said housing containing the following components:
 - i. A cleaning fluid pump,
 - ii. A pressure release valve that interrupts the cleaning fluid flow after deactivation of said fluid pump,
 - iii. A cleaning fluid heater, and
 - iv. A power source that provides power to both said

heater and pump;

d.A means to control duration of pump activation;

e.A means to pipe the cleaning fluid into cleaning nozzle;

f.A replaceable cleaning nozzle mounted within the confines of any conventional toilet bowl;

g.Said cleaning nozzle creates a single defused stream of cleaning fluid to a specific projected cleaning space located within the confines of the toilet bowl where,

i.Said projected cleaning space top area is parallel to the area projected by the upper rim of the toilet bowl,

ii.Said projected cleaning space top area is centered in the rear half of the toilet bowl along the longitudinal center line and segmented by the latitudinal center line of the toilet bowl,

iii.Said projected cleaning space top area is singular in any geometric shape, fitting within the confines of an oval area centered in the rear half along the longitudinal axis of any conventional toilet bowl, where said oval area has a maximum width of 150 millimeters and a maximum length of 200 millimeters, and said oval area is bound in the rear end of said toilet bowl by the inner rim of said toilet bowl,

iv.Said projected cleaning space has a height protruding into the toilet bowl of up to 100 millimeters.

- [c40] 40. An apparatus specified in [Claim Reference] Claim 39, where the cleaning nozzle is replaceable and contains different orifice sizes and orifice shapes.
- [c41] 41. An apparatus specified in [Claim Reference] Claim 40, where the cleaning nozzle is color coded.
- [c42] 42. An apparatus specified in [Claim Reference] Claim 41, where the cleaning nozzle connection is indexed and a push-in type.
- [c43] 43. An apparatus specified in [Claim Reference] Claim 39, where the cleaning nozzle is retractable to a non-use position.
- [c44] 44. An apparatus specified in [Claim Reference] Claim 39, where the cleaning nozzle movement into an operating position is cleaning fluid pressure activated.
- [c45] 45. An apparatus specified in [Claim Reference] Claim 39, where the cleaning nozzle movement into an operating position is solenoid activated.
- [c46] 46. An apparatus specified in [Claim Reference] Claim 39, where the cleaning nozzle movement into an operating position is mechanically activated.
- [c47] 47. An apparatus specified in [Claim Reference] Claim 39, where said cleaning nozzle is user specific and ex-

changeable via indexed quick disconnect mount.

[c48] 48. An apparatus specified in [Claim Reference] Claim 39, where said cleaning nozzle contains user specific orifices.